R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

THE CLAIMS

Claims 31 and 41 have been amended to correct the antecedent basis problems identified by the Examiner on page 4 of the Office Action.

Claim 55 has been re-amended and correctly listed as "Currently Amended" in the foregoing listing of claims in view of the objection to claim 55 in item 5 on page 3 of the Office Action.

It is respectfully submitted that no new matter has been added and that no new issues have been raised which require further consideration on the merits and/or a new search. Accordingly, it is respectfully requested that the amendments to the claims be approved and entered under 37 CFR 1.116.

THE PRIOR ART REJECTION

The claims were rejected under 35 USC 103 as being obvious in view of the combination of USP 6,287,027 ("Komiya et al") with various other patent publications. These rejections, however, are respectfully traversed.

Independent claim 24 recites, in particular, analyzing means for determining at least one of a reference point and a reference vector for determining the predetermined positions of the plurality of marks in the chart image such that the sum of squares of the difference becomes minimum between: the predetermined positions of the plurality of marks in the chart image created by the image pickup means, and the predetermined positions of the plurality of marks based upon the geometric property format stored in the format storage means.

In addition, independent claim 48 recites, in particular, an analyzing step for determining at least one of a reference point and a reference vector for determining the predetermined positions of the plurality of marks in the chart image such that the sum of squares of the difference becomes minimum between the predetermined positions of the plurality of marks in the chart image formed in the image picking-up step and the predetermined positions of the plurality of marks based upon the geometric property format stored in the format storing step.

Still further, independent claim 56 recites, in particular, an analyzing unit for determining at least one of a reference point and a reference vector for determining the predetermined positions of the plurality of marks in the chart image such that the sum of squares of the difference becomes minimum between the predetermined positions of the plurality of marks in the chart

image formed in the image picking-up unit and the predetermined positions of the plurality of marks based on the geometric format stored in the format storing unit.

Komiya et al has been cited as disclosing analyzing means, an analyzing step, and an analyzing unit, including minimizing "the sum of squares of the difference" as recited in independent claims 24, 48 and 56. Specifically, the Examiner has cited the abstract and Fig. 6 of Komiya et al. It is respectfully submitted, however, that Komiya et al does not disclose, teach or suggest this feature of the present invention. And it is respectfully submitted that the geometric correction disclosed by Komiya et al is not equivalent to minimizing the sum of the squares of the difference as recited in independent claims 24, 48 and 56.

First, the general method of least squares will be briefly described. The method of least squares is to determine, in approximating multiple measured values by using a specific function such as a linear function assumed from an appropriate model, a coefficient to minimize the sum of squared residuals so that the assumed function is well approximated to the multiple measured values.

For example, to obtain an approximation line of multiple measured values using the method of least squares, an approximation line is determined to minimize the sum of squares

of residuals from measured values to the approximation line. It is important to note here that determining the approximation line requires at least **three** measured values. A line (linear function) is described by the general expression $y = ax + b$. The coefficients a and b of the line cannot be determined with only one measured value. When there are two measured values, it is possible to determine the coefficients a and b; however, the result is a line connecting the values, which is not equivalent to obtaining an approximation line (i.e., no use is required for the method of least squares). Thus, it is when there are multiple measured values (three or more are necessary to determine an approximation line), which cannot all be connected with a line, and an approximation line for the multiple measured values is to be determined, that the method of least squares is used.

Fig. 4A of Komiya et al shows a geometric correction coefficient calculation unit 24. A geometric correction coefficient calculation unit 111 is shown in detail in Fig. 10 and is described beginning at column 10, line 5 of Komiya et al. According to Komiya et al, the geometric correction coefficient calculation unit 111 includes a rotation amount calculation unit 113, which "calculates a rotation angle θ as shown in Fig. 9 from the difference in x-coordinate between the markers M1 and M2 (or M3 and M4) detected by the marker portion detection unit 112"

(column 10, lines 28-31), and a translation amount calculation unit 114, which "calculates translation amounts Sx and Sy from the x- and y-coordinates of the markers M3 and M4 detected by the marker portion detection unit 112" (column 10, lines 32-35).

Thus, according to this disclosure of Komiya et al, the rotation amount calculation unit 113 calculates a rotation angle θ from two markers, and the translation amount calculation unit 114 also calculates translation amounts Sx and Sy from two markers.

It may be more technically correct to describe the translation amount calculation unit 114 of Komiya et al as calculating a translation amount Sx from x-coordinates of the two markers M3 and M4 (or M1 and M2) shown in Fig. 9, and as calculating a translation amount Sy from y-coordinates of the two markers M2 and M3 shown in Fig. 9. Even in this case, however, the rotation amount calculation unit 113 calculates the rotation angle θ only from two markers, and the translation amount calculation unit 114 calculates the translation amount Sx only from two markers and the translation amount Sy only from two markers.

Thus, in any event, only <u>two</u> markers are used to determine a certain value according to this structure of Komiya et al.

By contrast, as explained above, it is when there are multiple measured values (three or more are necessary to

determine an approximation line), which cannot all be connected with a line, and an approximation line for the multiple measured values is to be determined, that the method of least squares is used.

Since, according ot Komiya et al, both the rotation amount calculation unit 113 and the translation amount calculation unit 114 determine values (θ, Sx, Sy) based on two markers, this indicates that these units calculate the rotation angle and the translation amounts, respectively, without using the method of least squares (or rather, the units cannot use the method of least squares based on two markers as noted above). Then, according to Komiya et al, geometric correction is performed on printing image data by affine transformation using the calculated rotation angle and translation amounts.

It is respectfully submitted, therefore, that Komiya et al clearly does not disclose using the method of least squares.

It is respectfully submitted, moreover, that the geometric correction of Komiya et al does not calculate a reference point or reference vector. And since Komiya et al does not disclose a reference point and a reference vector, which are requirements to use the method of least squares, it is respectfully submitted that Komiya et al clearly does not suggest using the method of least squares.

Accordingly, it is respectfully submitted that although Komiya et al discloses a "geometric correction," which may superficially appear to be similar to the features of independent claims 24, 48 and 56, Komiya et al does not disclose, teach or suggest minimizing "the sum of squares of the difference" as recited in independent claims 24, 48 and 56, and Komiya et al does not disclose, teach or suggest the reference point or the reference vector recited in independent claims 24, 48 and 56.

Accordingly, it is respectfully submitted that even if considered in combination with the other cited references, Komiya et al does not render obvious the present invention as recited in independent claims 24, 48 and 56.

Accordingly, it is respectfully submitted that the present invention as recited in independent claims 24, 48 and 56, and all of the claims respectively depending therefrom, clearly patentably distinguishes over Komiya et al and all of the other cited references, under 35 USC 103.

* *

In view of the foregoing, entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,

/Douglas Holtz/

Douglas Holtz
Reg. No. 33,902

Frishauf, Holtz, Goodman & Chick, P.C.
220 Fifth Avenue - 16th Floor
New York, New York 10001-7708
Tel. No. (212) 319-4900
Fax No. (212) 319-5101

DH:iv
encs.